



Public Health GIS in Vermont

Pete Young, GIS Manager
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healthvermont.gov/GIS

- Geographic Information System (GIS) maps and geographic analyses regularly support public health activities in Vermont.

- Visit the VDH public health GIS landing page:

healthvermont.gov/GIS



VDH-GIS User Group

- Public Health GIS supports many VDH programs across all VDH Divisions:
 - VDH-GIS User Group with 25 plus users;
 - Other AHS-GIS users in Blueprint, DVHA, and DCF;
 - Shared desktop ArcGIS licenses;
 - Web-mapping capabilities using SQL-Server (data) and ArcGIS Server in conjunction with Instant Atlas, Geocortex, or custom apps built using ESRI javascript API.
 - Part of larger VT State Enterprise GIS Consortium (EGC), which is facilitated by the Vermont Center for Geographic Information (vcgi.vermont.gov) and includes several other Vermont agencies & departments.

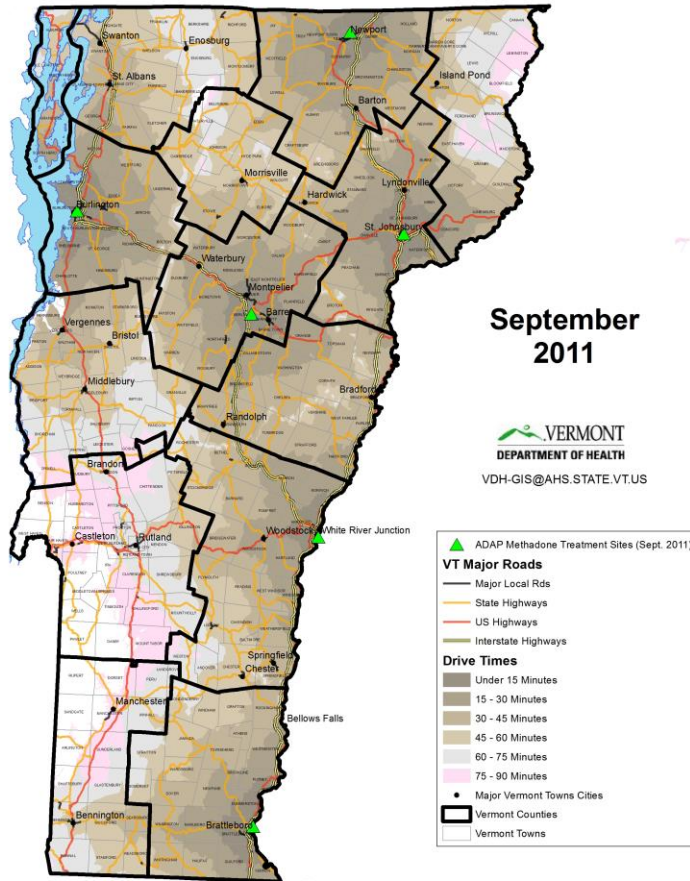
Public Health GIS at VDH



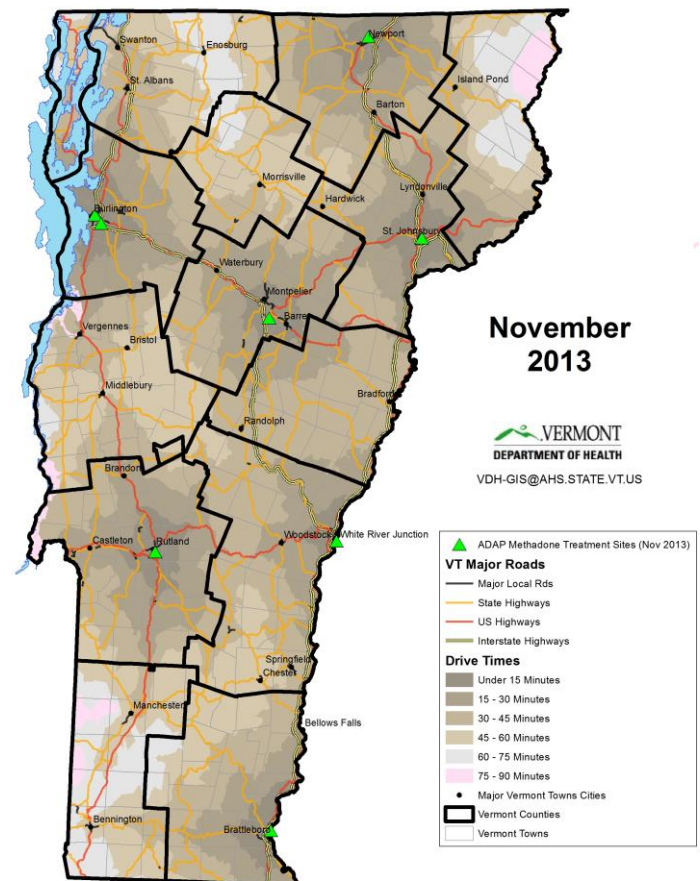
□ Desktop GIS

ADAP - Access to Addiction Treatment

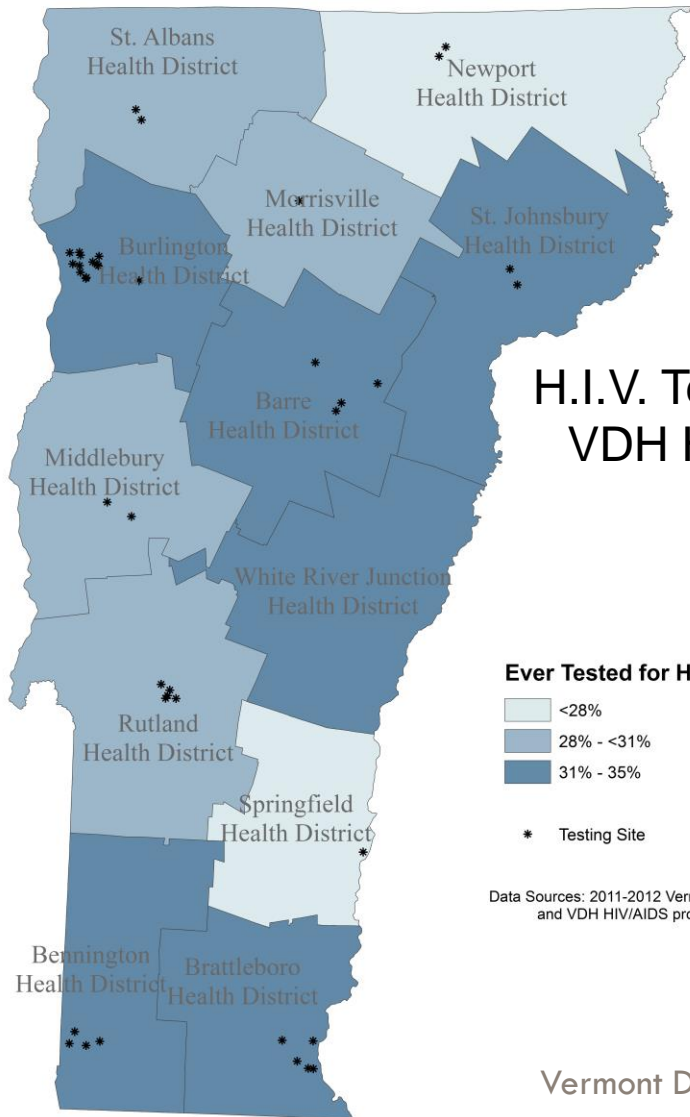
Drive Times to Methadone Treatment Locations



Drive Times to Hub / Methadone Treatment Locations



HIV/AIDS/STD/Hepatitis Program



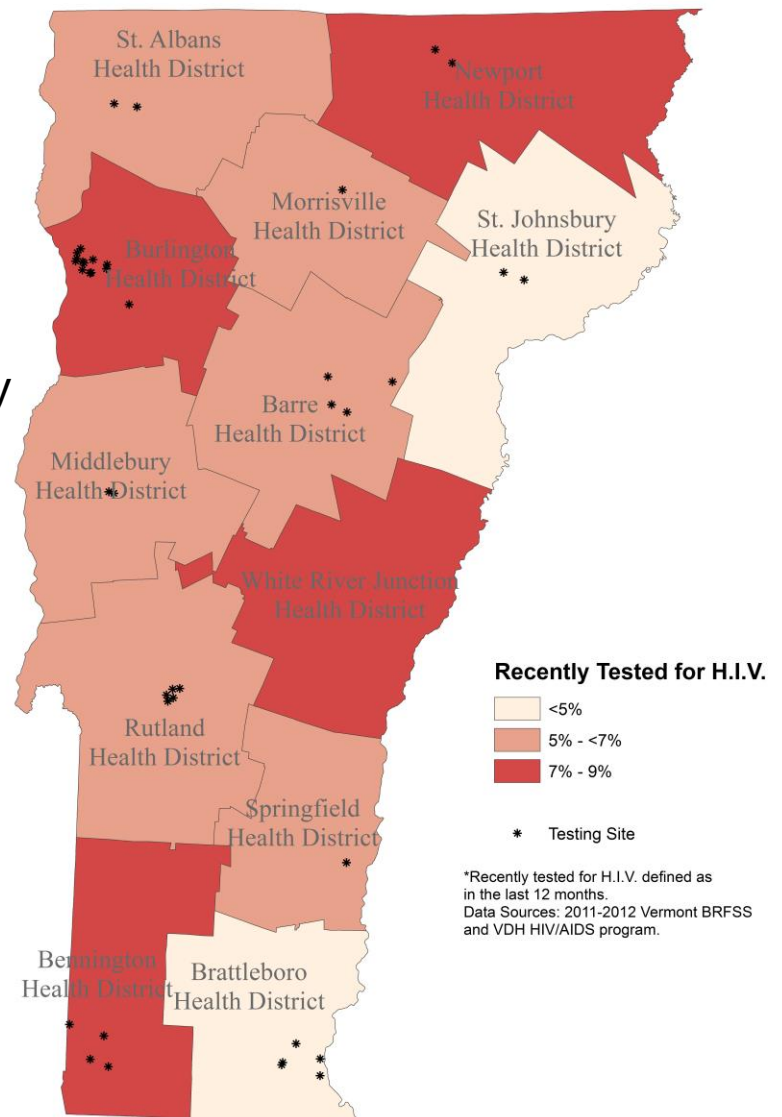
Ever Tested for H.I.V.



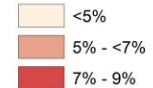
* Testing Site

Data Sources: 2011-2012 Vermont BRFS.
and VDH HIV/AIDS program.

H.I.V. Testing Rates by VDH Health District



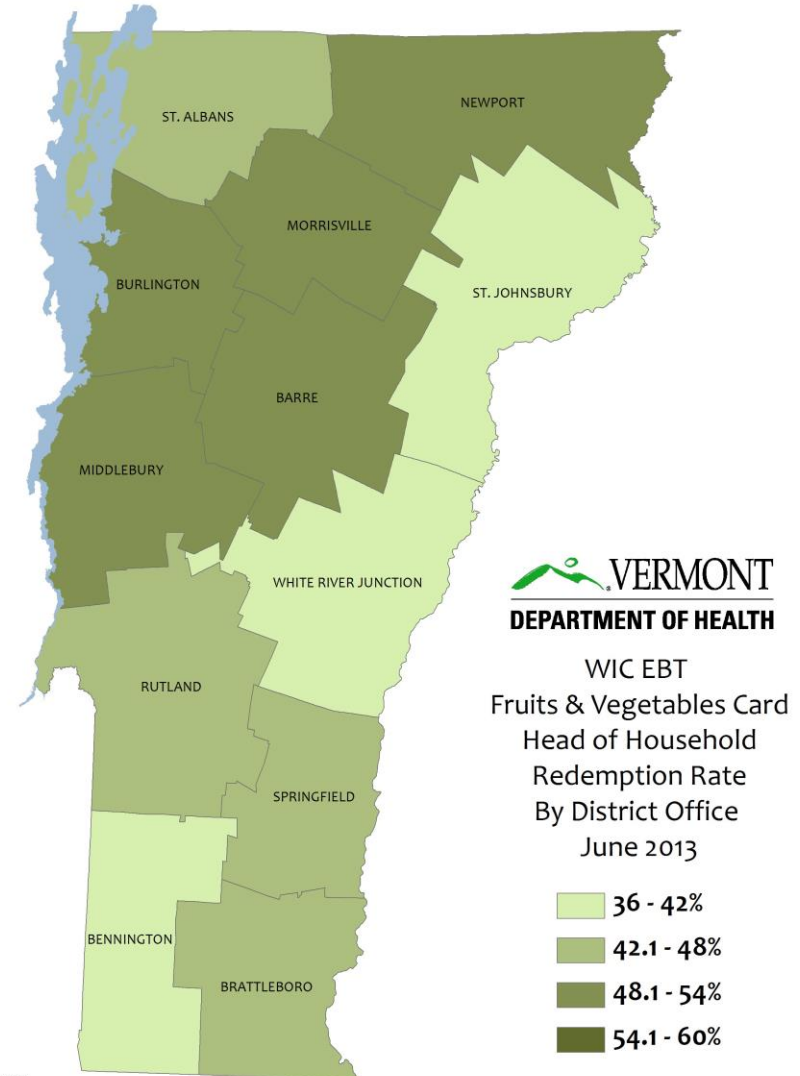
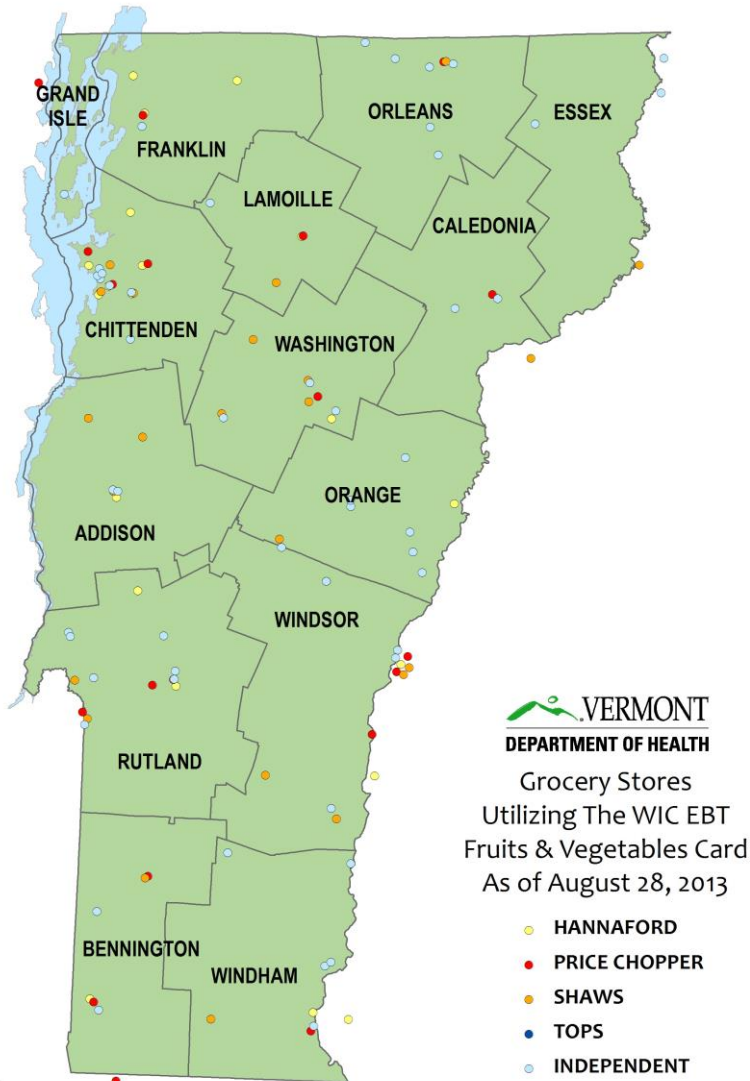
Recently Tested for H.I.V.



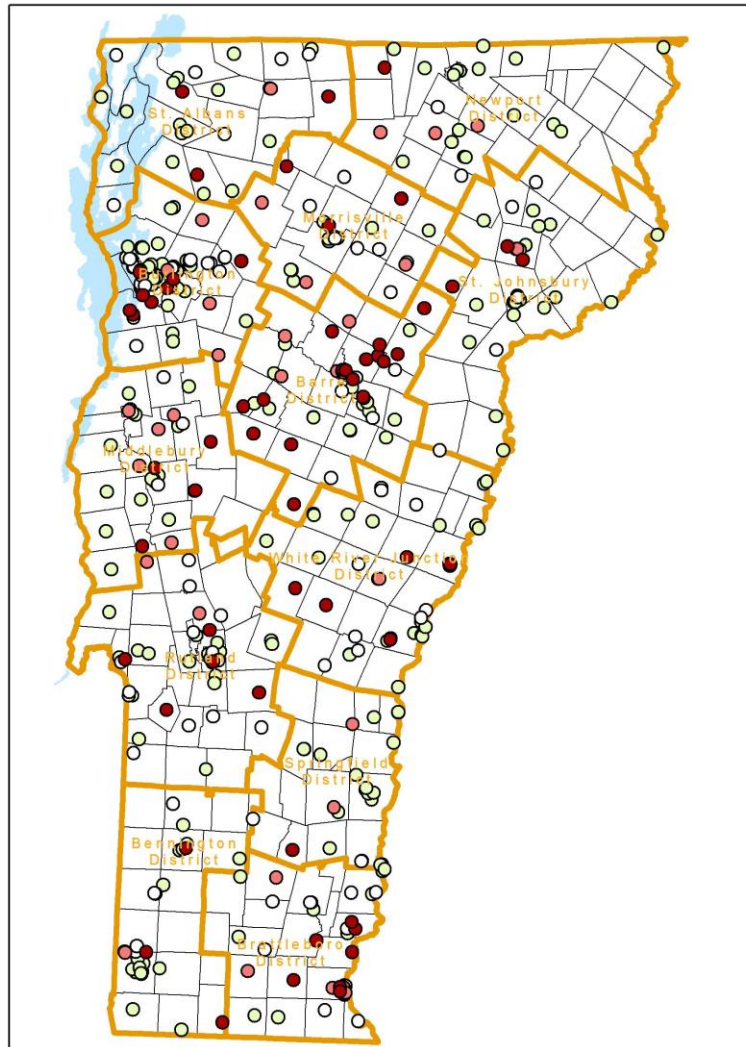
* Testing Site

*Recently tested for H.I.V. defined as
in the last 12 months.
Data Sources: 2011-2012 Vermont BRFS
and VDH HIV/AIDS program.

Maternal Child Health



Immunization Program



VT School Immunization Data
Percent of K-12 Students*
with a Philosophical Exemption**
2013-14 School Year

Philosophical IZ Exemptions

% of K-12: 2013-14

- 0% - 3.9%
- 4% - 6.9%
- 7% - 9.9%
- >= 10%

Orange outline: Vermont Health Districts
White outline: Vermont Towns

* School populations represented range from 7 to 1,318 students in kindergarten through grade 12.
10 Schools with 6 or fewer students in K- 12 have been excluded.

** A philosophical exemption to one or more required vaccines is given when a parent or guardian signs a form annually, acknowledging they have reviewed the VT Department of Health evidence-based information regarding immunizations.



ImmunizationProgram@State.VT.US

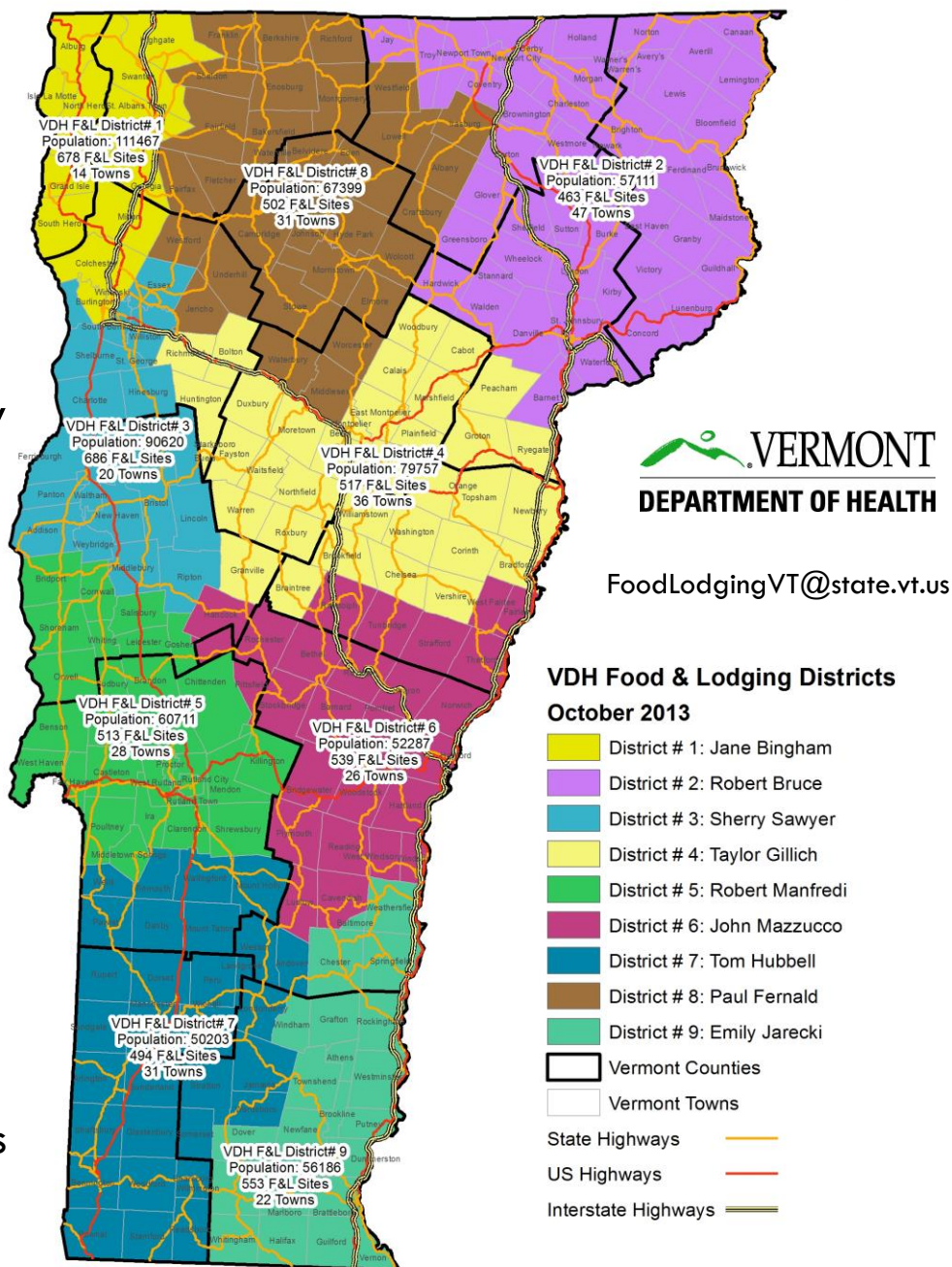
May 2015

Food & Lodging Program

- Redistricting after addition of two new Public Health Inspectors
- Goal: Increase inspection frequency and technical assistance
- Consider Data Using GIS:
 - ▣ Individual inspection load
 - ▣ Geography of state
 - ▣ Road infrastructure
 - ▣ Mileage and travel time
 - ▣ Available District Office space
- Measure Improvement in 2014:
 - ▣ Evaluate inspection frequency data
 - ▣ Review training and outreach events

Vermont Department of Health

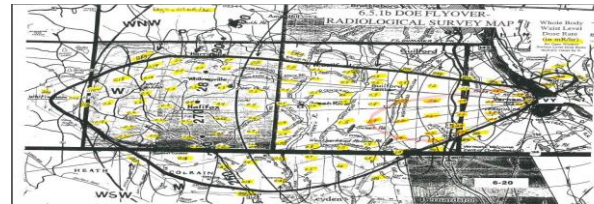
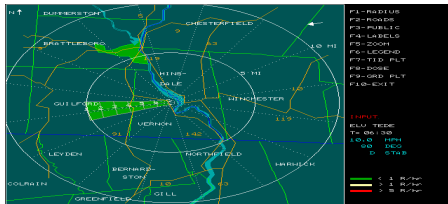
Food & Lodging Inspection Districts (October 2013)



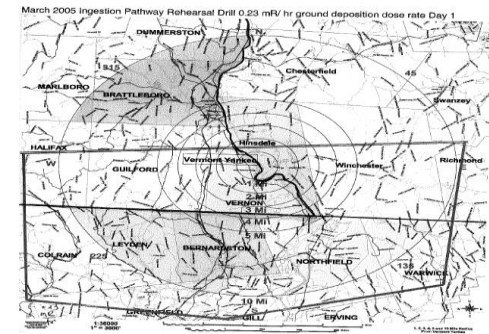
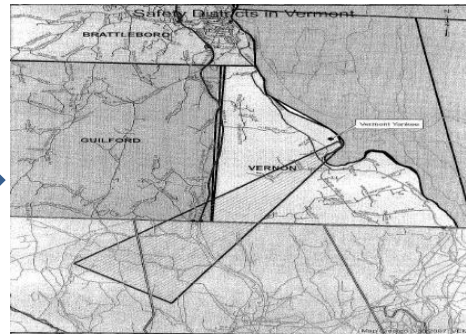
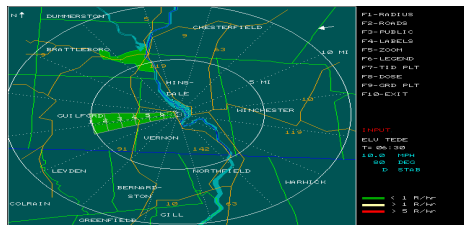
FROM PIN THE TAIL ON THE DONKEY TO STAR WARS: THE EVOLUTION OF MAPPING IN RADIOLOGICAL EMERGENCY RESPONSE TRAINING

ALL IMAGES ARE HYPOTHETICAL DRAFTS FOR TRAINING/DEMONSTRATION PURPOSES ONLY

MID-1990s-PRE-GIS



EARLY TO MID 2000s - EARLY USE OF GIS



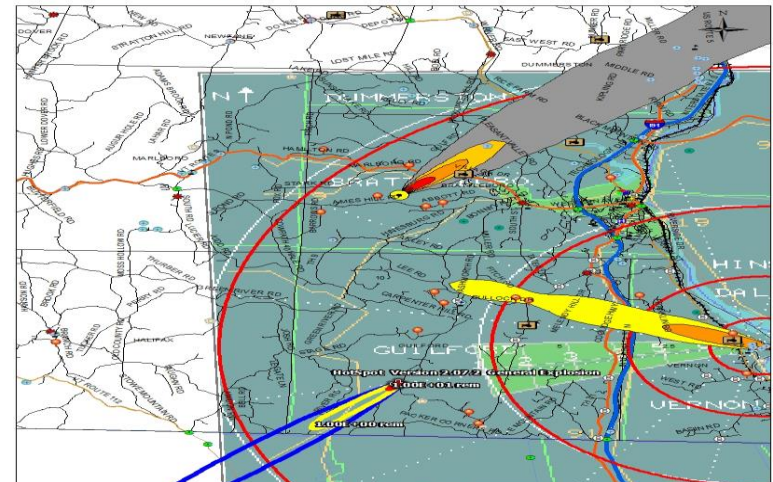
2013-GIS FULLY INTEGRATED INTO RESPONSE EFFORT

HYPOTHETICAL DRAFT DEMONSTRATION TABLE OF CONTENTS

1.0 Introduction	1.1 Purpose and Scope	1.2 Background	1.3 Organization
2.0 Vermont Radiological Emergency Response Team (VREERT) Structure	2.1 VREERT Mission	2.2 VREERT Organization	2.3 VREERT Roles and Responsibilities
3.0 Vermont Radiological Emergency Response Team (VREERT) Operations	3.1 VREERT Operations Overview	3.2 VREERT Operations Procedures	3.3 VREERT Operations Resources
4.0 Vermont Radiological Emergency Response Team (VREERT) Training	4.1 VREERT Training Overview	4.2 VREERT Training Procedures	4.3 VREERT Training Resources
5.0 Vermont Radiological Emergency Response Team (VREERT) Assessment	5.1 VREERT Assessment Overview	5.2 VREERT Assessment Procedures	5.3 VREERT Assessment Resources
6.0 Vermont Radiological Emergency Response Team (VREERT) Conclusion	6.1 VREERT Conclusion Overview	6.2 VREERT Conclusion Procedures	6.3 VREERT Conclusion Resources
7.0 Vermont Radiological Emergency Response Team (VREERT) Appendix	7.1 VREERT Appendix Overview	7.2 VREERT Appendix Procedures	7.3 VREERT Appendix Resources
8.0 Vermont Radiological Emergency Response Team (VREERT) Glossary	8.1 VREERT Glossary Overview	8.2 VREERT Glossary Procedures	8.3 VREERT Glossary Resources
9.0 Vermont Radiological Emergency Response Team (VREERT) Bibliography	9.1 VREERT Bibliography Overview	9.2 VREERT Bibliography Procedures	9.3 VREERT Bibliography Resources
10.0 Vermont Radiological Emergency Response Team (VREERT) Index	10.1 VREERT Index Overview	10.2 VREERT Index Procedures	10.3 VREERT Index Resources

Presented by Razelle Hoffman-Contois
Vermont Radiological Dose
Assessment Team

RADIOLOGICAL RESPONSE DEMONSTRATION MAP 11-2013



Public Health GIS at VDH

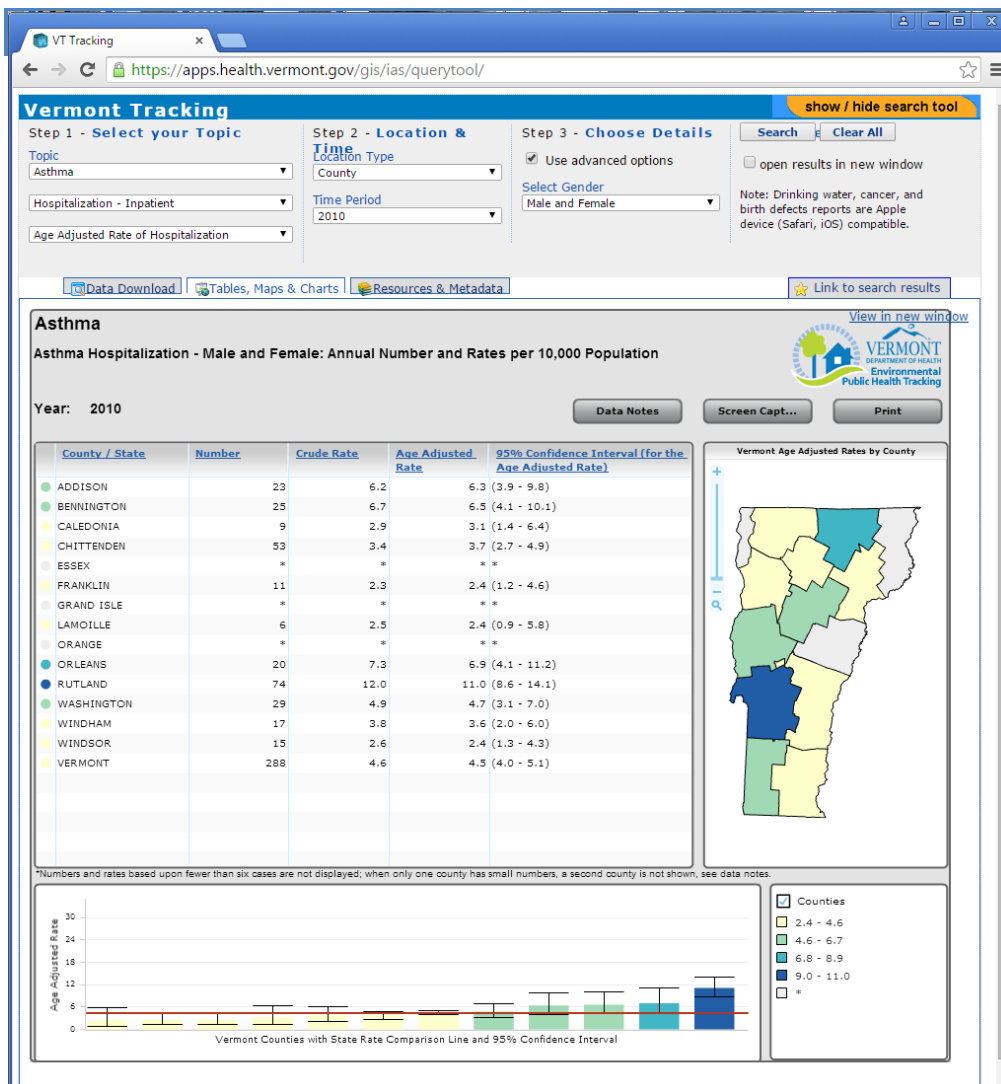


- Desktop GIS
- **Open Data**



Environmental Public Health Tracking

Making the connection between health and environment



View Data
Create maps, charts and tables

Environmental Topics
Air Quality

Health Topics
Asthma

healthvermont.gov/Tracking

Vermont Cancer Registry

Lung and Bronchus Cancer SIRs 2002-2011

Source: Vermont Cancer Registry



[View in new window](#)

Data Notes

Share

Print

Standardized Incidence Ratio (SIR) = Observed Cases/Expected Cases

Area	Observed Cases	Expected Cases	SIR	Statistically Compared to State
Addison County Central	48	54.1	0.89	Not Different
Addison County East	22	20.7	1.06	Not Different
Addison County North	58	58.4	0.99	Not Different
Addison County West	40	47.3	0.85	Not Different
Barre City	96	80.6	1.19	Not Different
Barre Town	52	67.7	0.77	Not Different

Clear X Filter X

Statewide

SIR

Observed Cases

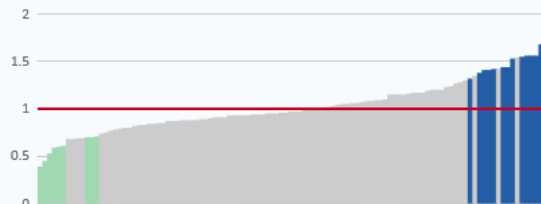
VERMONT

1.00

19,488

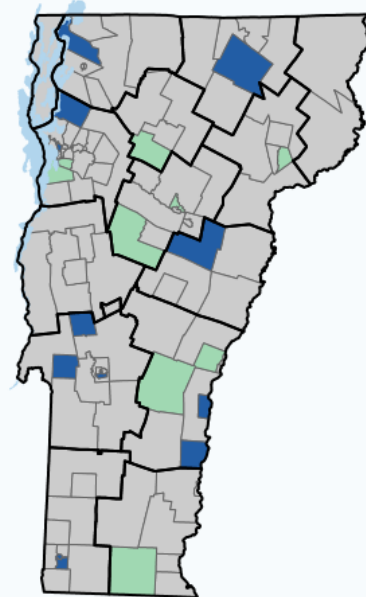
*Data not shown in areas with fewer than 6 observed cases. Statistical comparisons to state based on multiple comparisons correction.

SIRs by Area



- ☒ Sub-County Geographic Areas
- ☒ Statistically Lower
- ☒ Statistically Higher
- ☒ Not Different
- ☒ < 6 Cases
- ☒ Vermont Counties
- ☐ Vermont Towns (Click to see town boundaries)

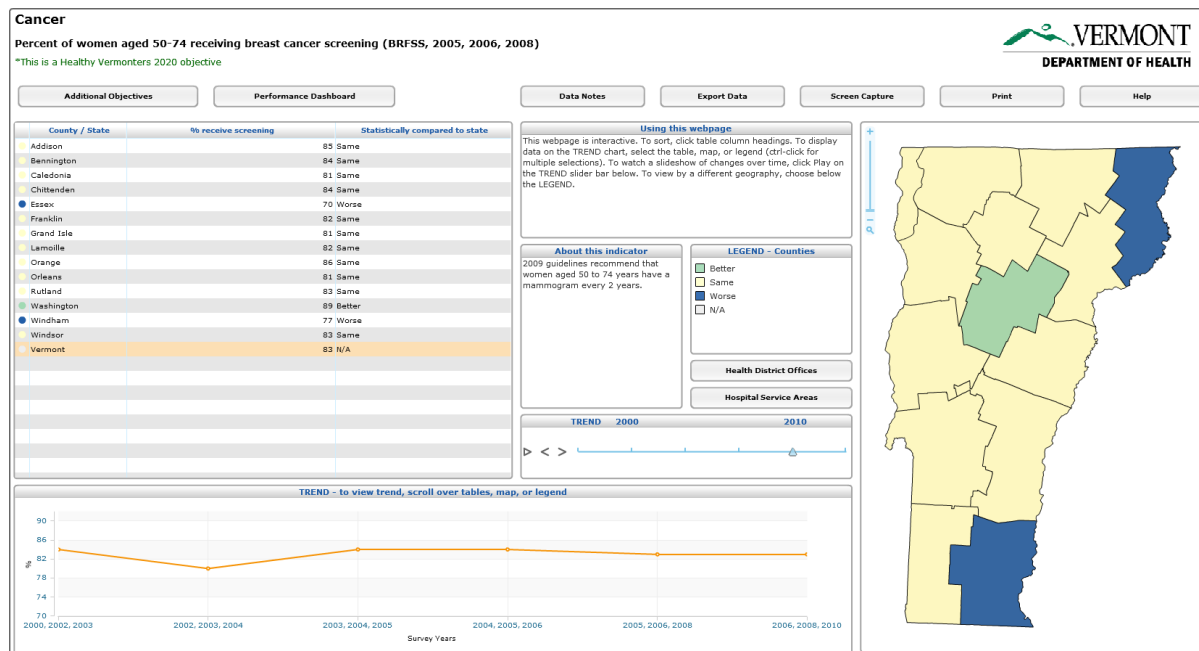
SIRs by Area



healthvermont.gov/Tracking

Healthy Vermonters 2020 – Maps & Trends

Healthy Vermonters Toolkit		
Statewide Population Indicators	Maps & Trends	Performance Dashboard
HV2020 Goal: <i>A Healthy Lifetime</i> 📄		
Family Planning	County District HSA	Dashboard
Maternal & Infant Health	County District HSA	Dashboard
Early Childhood Screening	County District HSA	Dashboard
School-age Health	County District HSA	Dashboard
Older Adults	County District HSA	Dashboard
HV2020 Goal: <i>Providing for Better Health</i> 📄		
Access to Health Services	County District HSA	Dashboard
Immunization & Infectious Disease	County District HSA	Dashboard
Oral Health	County District HSA	Dashboard
Mental Health	County District HSA	Dashboard
HV2020 Goal: <i>Behaviors, Environment & Health</i> 📄		
Alcohol & Other Drug Use	County District HSA	Dashboard
Tobacco Use	County District HSA	Dashboard
Nutrition & Weight	County District HSA	Dashboard
Physical Activity	County District HSA	Dashboard
Injuries	County District HSA	Dashboard
Environmental Health	County District HSA	Dashboard
HV2020 Goal: <i>Diseases & Health Conditions</i> 📄		
Heart Disease & Stroke	County District HSA	Dashboard
Cancer	County District HSA	Dashboard
Diabetes	County District HSA	Dashboard
Respiratory Disease	County District HSA	Dashboard
Arthritis & Osteoporosis	County District HSA	Dashboard
HIV AIDs & STDs	County District HSA	Dashboard



healthvermont.gov/HV2020



Public Health GIS at VDH

- Desktop GIS
- Open Data
- **Web Maps**

VDH Web Maps – Office of Public Health Preparedness (OPHP)

Map Layers

- ☒ AHS/DAIL_Facilities
 - ☒ DAIL Skilled Nursing Facilities
 - ☒ DAIL Assisted Living Facilities
 - ☒ DAIL Residential Care Homes
 - ☒ DAIL Therapeutic Community Residences
- ☒ Vermont State Boundary
- ☒ Vermont Major Roads
- ☒ Vermont Towns
- ☒ Lake Champlain

Show Legend

I want to...

- Show the layer list**
Turn layers on and off, and perform actions on them.
- Create a printable map**
Create a printable map
- Identify by rectangle**
Draw a rectangle to view information about that area.
- Identify by freehand shape**
Draw a shape to view information about that area.
- Return to initial map extent**
Go back to the initial map position and zoom level.

Identify Results (1026)

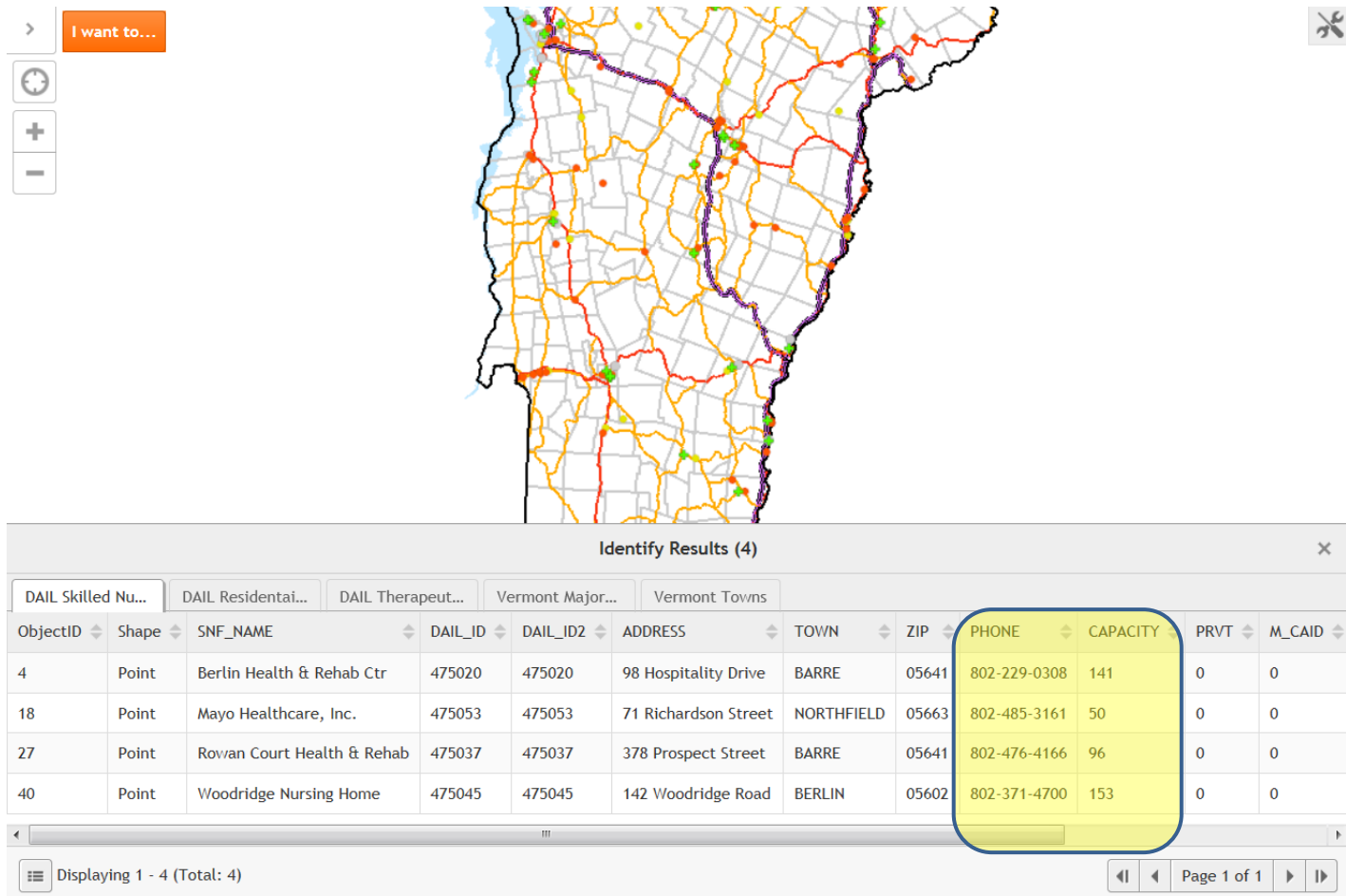
- Skilled Nursing Facility Name:**
Berlin Health & Rehab Ctr
98 Hospitality Drive, BARRE 05641
802-229-0308
Capacity: 141
- Skilled Nursing Facility Name:**
Mayo Healthcare, Inc.
71 Richardson Street, NORTHFIELD 05663
802-485-3161
Capacity: 50
- Skilled Nursing Facility Name:**
Menig Extended Care
44 South Main Street, RANDOLPH 05060
802-728-2125
Capacity: 30
- Skilled Nursing Facility Name:**
Rovan Court Health & Rehab
378 Prospect Street, BARRE 05641
802-476-4166
Capacity: 96
- Skilled Nursing Facility Name:**
Woodridge Nursing Home
142 Woodridge Road, BERLIN 05602
802-371-4700
Capacity: 153
- Residential Care Home Name:**
ARIOLI COMMUNITY CARE HOME
15 ARIOLI AVENUE

Displaying 1 - 50 (Total: 1026)
Page 1 of 21

I want to...

Drag on the map to draw a shape.

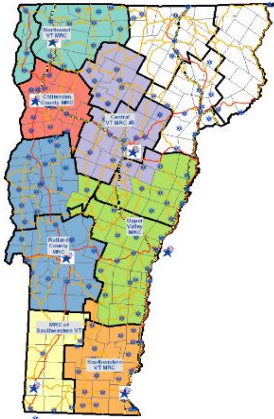
Web Maps allow VDH-OPHP to focus response efforts rapidly



VDH – Connecting Volunteers EMS/MRC

Map Locator

Click on the map to find your local EMS squad or MRC unit. You will leave our site to view the map.



EMS Agency & MRC Unit Finder

Map Layers

- ☒ Operational Layers
 - ☒ FirstResponders_SiteResponse123
 - ☒ MRC Offices
 - ☒ First Responder Stations
 - ☒ E911 ESite Locations - Buildings Only
 - ☒ Roads from E911 Data
 - ☒ VT Major Roads
 - ☒ Vermont Counties
 - ☒ Vermont Towns
 - ☒ MRC Regions
 - ☒ FirstResponders Site Response (3 nearest per sq. km.)

Show Legend

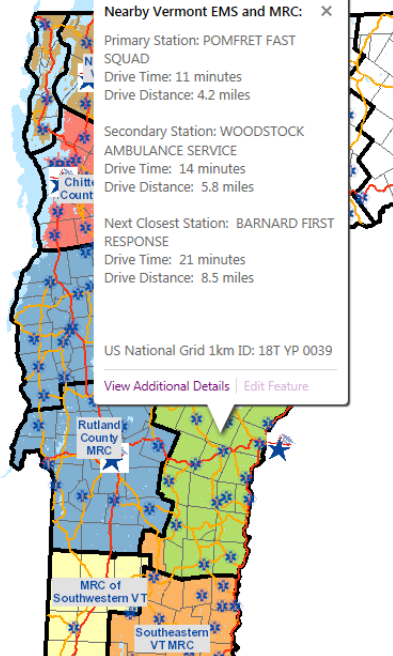
I want to...

Nearby Vermont EMS and MRC:

- Primary Station: POMFRET FAST SQUAD
Drive Time: 11 minutes
Drive Distance: 4.2 miles
- Secondary Station: WOODSTOCK AMBULANCE SERVICE
Drive Time: 14 minutes
Drive Distance: 5.8 miles
- Next Closest Station: BARNARD FIRST RESPONSE
Drive Time: 21 minutes
Drive Distance: 8.5 miles

US National Grid 1km ID: 18T YP 0039

[View Additional Details](#) | [Edit Feature](#)



Ask a Question

- ☐ I'm interested in EMS
- ☐ I'm interested in MRC
- ☐ I'm interested in both EMS and MRC

Your Name

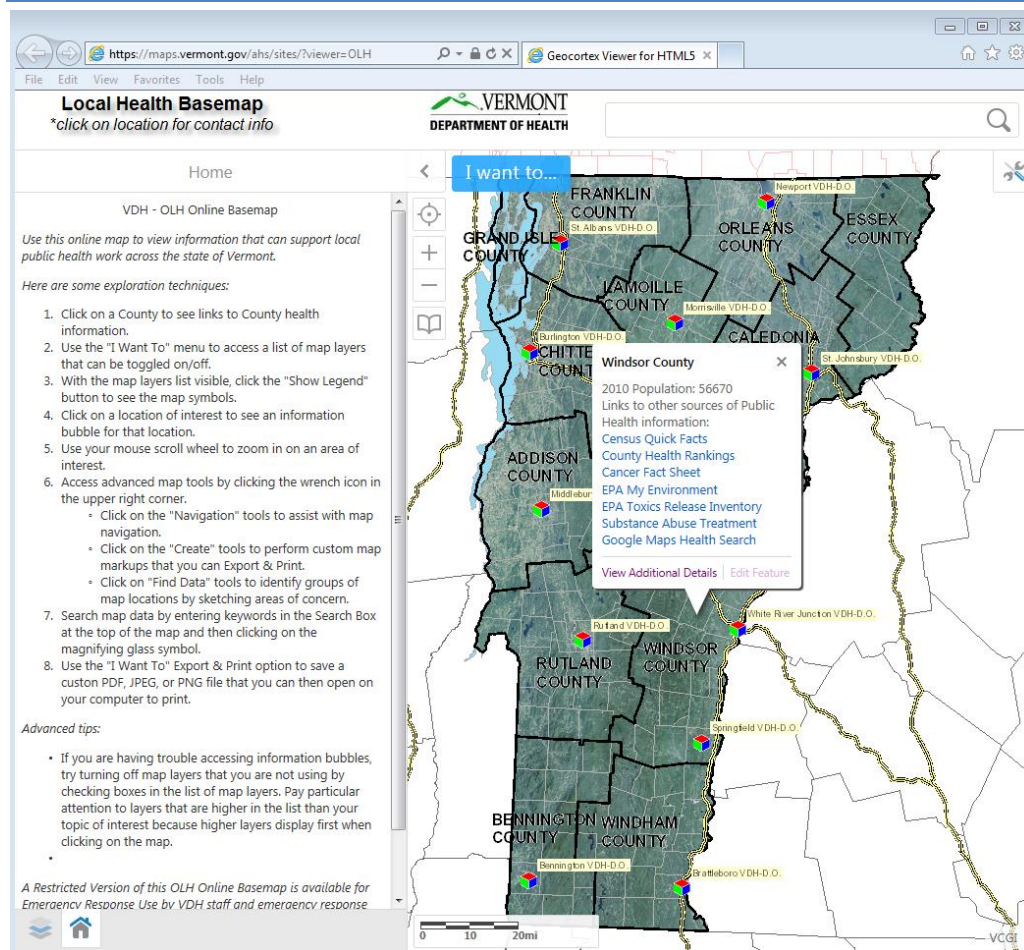
Email

Town

What is Your Question?

www.oncallforvt.org/map-locator

VDH – Office of Local Health



Info Bubbles:

Additional information on map layer features can be accessed by clicking on specific map locations to bring up information bubbles.

This example shows the info bubble for Windsor County, which includes links to other resources such as the WRJ Foundation's County Health Rankings.

<https://maps.vermont.gov/ahs/sites/?viewer=OLH>

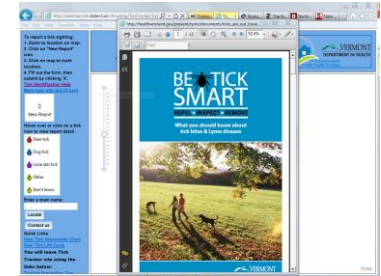
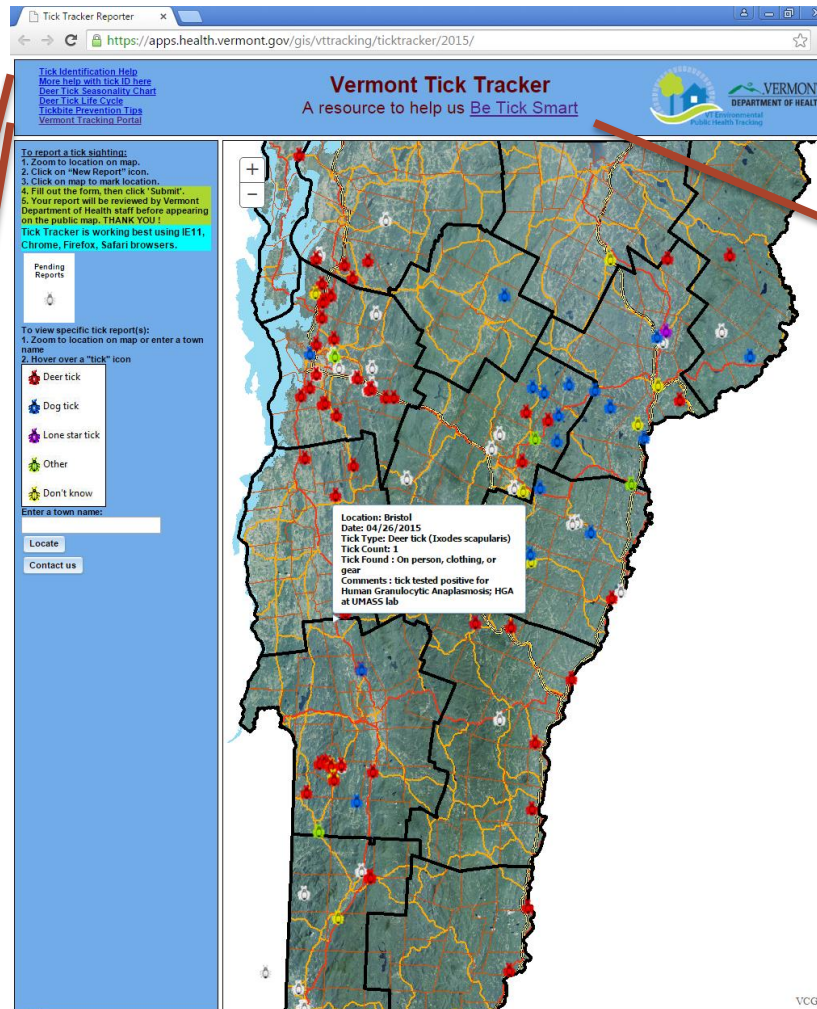
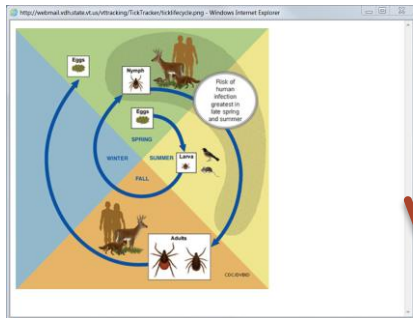
Public Health GIS at VDH

- Desktop GIS
- Open Data
- Web Maps
- **Web Map Apps**
 - custom coding using the ESRI javascript API

Infectious Disease Health Surveillance Epi

VERMONT TICK TRACKER

Crowd sourcing to map the locations of ticks



HealthVermont.gov/TickTracker

Environmental Health Surveillance Epi

Blue Green Algae Tracker Mod...

https://apps.health.vermont.gov/gis/vtracking/test/bluegreenalgae/bgamoderator2011 DuckDuckGo

Blue Green Algae Tracker 2015 - Moderator

To create a report:

1. Zoom to location on the map.
2. Click on "New Report" icon.
3. Click on map to mark location.
4. Fill out the form, then submit by clicking on 'Save'.

New Report

Enter site #:

Zoom to site

Enter a town name:

Elmore

Locate

[Download BGA Data](#)

[LCC Supplemental reports / New Test Sites](#)

[DEC/VDH Supplemental reports / New Test Sites](#)

[Modify Approved reports](#)

New Report

* Lake:

* Region:

* Municipality:

* Site#:

* Station:

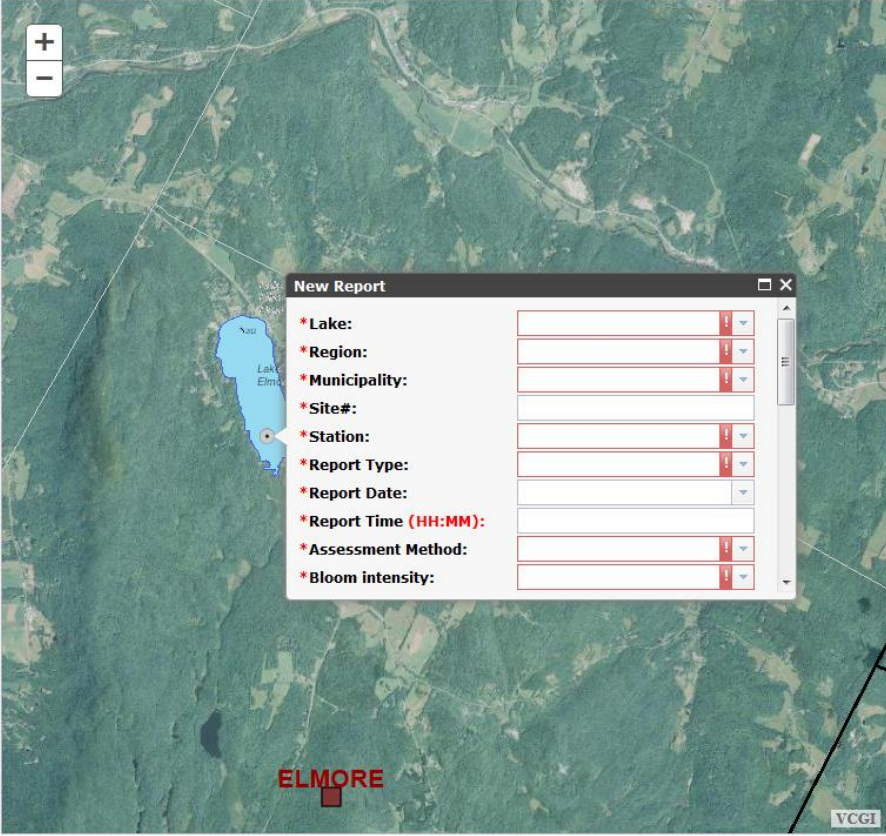
* Report Type:

* Report Date:

* Report Time (HH:MM):

* Assessment Method:

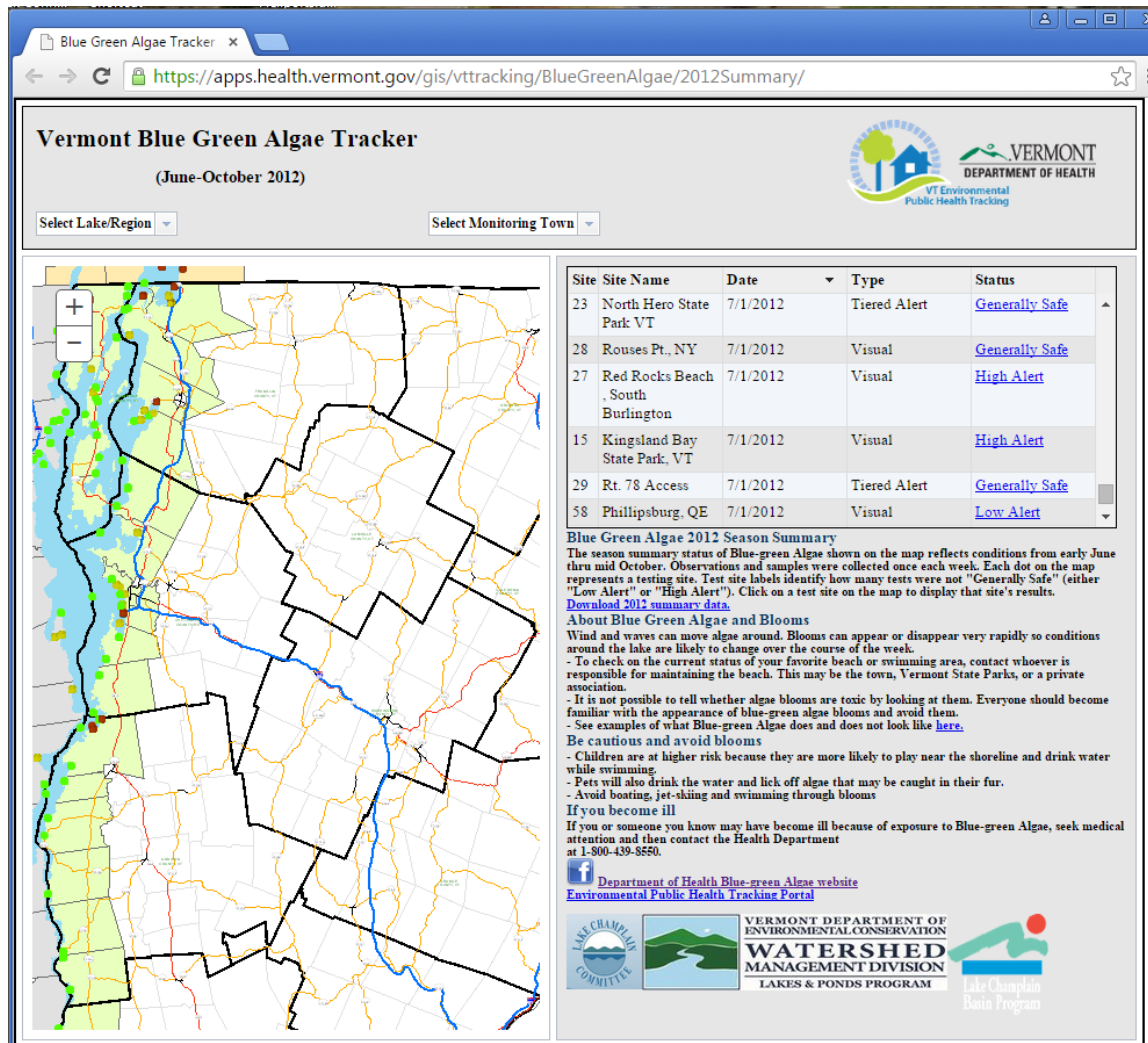
* Bloom intensity:



Vermont Blue
Green Algae
Tracker

Citizen Scientists
mapping the locations
of dangerous algae
blooms.

Environmental Health Surveillance Epi



Vermont Blue Green Algae Tracker

Citizen Scientists mapping the locations of dangerous algae blooms.

healthvermont.gov/enviro/bg_algae/bgalgae.aspx

VDH-GIS Coming Soon!

- ❑ Participation in the VCGI Data Warehouse
(improved metadata and SQL-Server linkages)
- ❑ Updated emergency preparedness web and large-format-paper basemaps.
- ❑ New cluster analysis methods that accommodate the multiple comparisons problem when evaluating statistical significance.
- ❑ Integration of Web Mapping with CDC [Epi Info](#) software, which includes powerful web survey tools.
- ❑ ArcGIS Online? ArcGIS Pro?

Questions?

Q & A

Send follow-up comments,
suggestions, and questions to:
Peter.Young@state.vt.us



- Visit the VDH public health GIS landing page:
healthvermont.gov/GIS